4. A tribonectin comprising a boundary-lubricating amount of a fragment of SEQ ID NO:1, wherein said fragment comprises amino acids 1 to 156 and 200 to 1404 of SEQ ID NO:1 and lacks amino acids 157-199 of SEQ ID NO:1.

5. A tribonectin comprising a boundary-lubricating amount of a fragment of SEQ ID NO:1, wherein said fragment comprises amino acids 1 to 106 of SEQ ID NO:1 and 200-1404 of SEQ ID NO:1 and lacks amino acids 107 to 199 of SEQ ID NO:1.

6. A tribonectin comprising a boundary-lubricating amount of a fragment of SEQ ID NO:1, wherein said fragment comprises amino acids 1 to 25 of SEQ ID NO:1, 67 to 106 of SEQ ID NO:1 and 200-to 1404 of SEQ ID NO:1 and lacks amino acids 26 to 66 of SEQ ID NO:1.

A3

10. The tribonectin of claim 1, wherein said tribonectin reduces the coefficient of friction between bearing surfaces.

11. The tribonectin of claim 1, wherein said tribonectin is characterized as reducing the coefficient of friction between bearing surfaces in vitro.

12. The tribonectin of claim 1, wherein said tribonectin is characterized as reducing the coefficient of friction between bearing surfaces in vivo.

A4

13. The tribonectin of claim 1, wherein addition of said tribonectin to a solution does not increase the viscosity of said solution by more than 10%.

16. The tribonectin of claim 1, wherein at least 10% of said tribonectin is glycosylated by said O-linked oligosaccharide moiety.

A5

17. The tribonectin of claim 1, wherein at least 40% of said tribonectin is glycosylated by said O-linked oligosaccharide moiety.

18. The tribonectin of claim 19, wherein the molecular weight of said tribonectin is in the range of 200-280 kDa.

19. A composition comprising a boundary-lubricating amount of a fragment of megakaryocyte stimulating factor.

A6

21. The fragment of claim 19, wherein said fragment comprises the amino acid sequence of residues 200-1140 of SEQ ID NO:1.

A7

23. The fragment of claim 19, wherein said fragment comprises the amino acid sequence of residues 200-1167 of SEQ ID NO:1.

A8

25. The fragment of claim 19, wherein said fragment comprises the amino acid sequence of residues 200-1212 of SEQ ID NO:1.

27. The fragment of claim 19, wherein said fragment comprises the amino acid sequence of residues 200-1263 of SEQ ID NO:1.

A9

28. The fragment of claim 19, wherein said fragment lacks the amino acid sequence of residues 1-24 of SEQ ID NO:1.

29. The fragment of claim 19, wherein said fragment lacks the amino acid sequence of residues 67-104 of SEQ ID NO:1.

A10

40. A biocompatible composition comprising a tribonectin, wherein said composition is a film, membrane, foam, gel, or fiber.

41. The composition of claim 40, wherein said tribonectin is a membrane, foam, gel, or fiber.

55. The tribonectin of claim 1, further comprising hyaluronic acid.

A11

56. A composition comprising a boundary-lubricating polypeptide encoded by a nucleic acid consisting essentially of exon 1, 2, 3, 4, and 6-12 of a human MSF gene.

57. A composition comprising a boundary-lubricating polypeptide encoded by a nucleic acid consisting essentially of exon 1, 2, 3, and 6-12 of a human MSF gene.

58. A composition comprising a boundary-lubricating polypeptide encoded by a nucleic acid consisting essentially of exon 1, 3, and 6-12 of a human MSF gene.

59. A composition comprising a boundary-lubricating polypeptide encoded by a nucleic acid consisting essentially of exon 1 and 6-12 of a human MSF gene.

REMARKS

Applicant has made a significant discovery in the field of osteoarthritis – a lubricating polypeptide encoded by an MSF gene is made by cells (e.g., chrondrocytes and fibroblasts) in the synovial cavity of joints. This novel activity (boundary lubrication) of megakaryocyte stimulating factor (MSF) and fragments thereof is disclosed in the present application. Prior to Applicant's invention, MSF was thought to made by peripheral blood cells such as monocytes and to function as a cell stimulatory factor, e.g., for immune or hematopoetic cells

Applicant was the first to identify a lubricating function of MSF and alternative splice variants (e.g., isoforms V_1, V_2, and V_3) of the MSF gene. Specific splice variants or MSF isoforms with lubricating activity were identified in human synovial fluid. The claims have been amended to reflect this groundbreaking discovery and to distinguish the invention over the prior art by requiring boundary-lubricating compositions containing MSF and lubricating fragments of MSF.

Claims 1-6, 10-19, 21, 23, 25, 27-29, 40, and 55-59 are pending. Claims 1, 3-6, 10, 13, 16-19, 21, 23, 25, 27-29, and 40 have been amended. Claims1, 3-6, 19, 21, 13, 15, 27, 28, and 29 have been amended to require a boundary-lubricating amount or fragment of SEQ ID NO:1